BROOKVILLE TAILWATER

Franklin County

2006 Fish Management Report

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EXECUTIVE SUMMARY

- The Brookville tailwater is approximately two miles in length and considered the portion of the East Fork Whitewater River below Brookville Reservoir to its confluence with the West Fork Whitewater River.

- Sixty-six brown trout that weighed 55.0 lbs were collected. More brown trout were collected in 2006 than in 2004 and 2005 combined (61). Brown trout ranged in length from 9.3 to 20.4 in and averaged 11.9 in. Eighteen percent of brown trout were 14 in and larger and likely carry-over fish. No evidence of natural reproduction was observed.

- Forty-six rainbow trout that weighed 45.6 lbs were collected. This was a substantial increase from 2005 when only 6 rainbow trout were collected. Rainbow trout ranged in length from 11.9 to 18.6 in and averaged 13.4 in.

- The temperature regime of the Brookville tailwater is one of the factors limiting carry-over of brown trout from year to year. Therefore, ACOE and DFW are working together to determine a feasible tailwater temperature regime that would aid survival and promote brown trout carry-over from year to year.

- The former closed season for inland stream trout fishing has been changed to a "catch and release only" season from January 1 through April 14. The closed season now runs from April 15 to the last Saturday in April (opening day). Anglers should note that the starting time has been changed from 0500 to 0600 local time to adjust to daylight savings time. Harvest of trout in inland streams, other than Lake Michigan tributaries, begins at 0600 on the last Saturday in April and goes through December 31. In the Brookville tailwater, anglers may only harvest one brown trout per day, which must be at least 18 in long. Rainbow trout must be at least 7 in long. The daily bag limit for trout (rainbow and brown in aggregate) is 5 fish / angler / day.

- In order to better assess brown trout carry-over, age, growth, and condition should be evaluated regularly. The potential for overcrowding/stockpiling and increased competition exists as more brown trout are stocked each year and as the carry-over of brown trout increases. The next survey of the Brookville tailwater trout fishery is scheduled for 2007 and will focus on the age, growth, condition, and survival of brown trout.

INTRODUCTION

Brookville Reservoir is a 5,260-acre Army Corps of Engineers (ACOE) flood-control impoundment. The tailwater, which is approximately two miles in length, is considered the portion of the East Fork Whitewater River below the dam to its confluence with the West Fork Whitewater River.

The Division of Fish and Wildlife (DFW) stocked rainbow and brown trout in the Brookville tailwater from 1976 to 1983. During this time, while the trout stockings were viewed primarily as "put-and-take", it was anticipated that some of the brown trout might carry-over and increase the quality of the fishery. Because few, if any, brown trout carried over from year to year, brown trout stockings ceased. Since 1984, the DFW has only stocked London strain rainbow trout. Approximately 1,500 rainbow trout (at least 7 in long) are stocked each year. In the spring of 2001, with approval from the DFW, the Central Indiana chapter of Trout Unlimited (CITU) began stocking brown trout with a stocking goal of 2,000 trout per year.

Brown trout carry-over was documented during the 2003 survey of the tailwater. Following the 2003 survey, special regulations were proposed to facilitate carry-over of brown trout from year to year. In 2005, regulations were adopted to limit harvest of brown trout to one fish per day of at least 18 in.

A fisheries survey of the Brookville tailwater was conducted in 2006. The primary goal of the survey was to evaluate brown trout carry-over and to document if natural reproduction of brown trout was occurring.

METHODS

The Brookville tailwater was sampled on July 17, 2006. Station 1 (immediately below the reservoir) sampling started at a side channel and continued upstream to the end of the concrete spillway. Station 2 was located in the Brookville Town Park; sampling started at the head of the riffle on the downstream edge of the park property and continued upstream to the first riffle where the stream was constricted (obvious gradient change). Station 3 sampling began upstream of the highway 52 bridge and continued upstream to the first riffle.

A DC barge electrofisher was used to collect fish with a crew of three people. Only rainbow and brown trout were collected. Fish collected were measured to the nearest 0.1 in and

weighed to the nearest 0.01 lb. Water temperature and dissolved oxygen were taken at each station.

RESULTS

Water temperature and dissolved oxygen both increased from station 1 to station 3. Water temperature was 62.9°F at station 1, 68.2°F at station 2 and 73.5°F at station 3. Dissolved oxygen measured 10.3 ppm (parts per million) at station 1, 13.0 ppm at station 2 and 14.0 ppm at station 3.

Sixty-six brown trout that weighed 55.0 lbs were collected. More brown trout were collected in 2006 than in 2004 and 2005 combined (61). Seventy-three percent of the brown trout were collected at station 2. Brown trout ranged in length from 9.3 to 20.4 in and averaged 11.9 in. The size range of brown trout stocked in 2006 was 6.0 to 8.0 in. Half of the brown trout collected were between 9.0 and 10.9 in and likely from the 2006 stocking. Twenty-one brown trout (32%) ranged in length from 11.0 in to 13.9 in. However, since there is not a gap in the length frequency to indicate age as in previous years, it is unclear how many of these fish were carry-over fish and how many were from the 2006 stocking. Eighteen percent of brown trout were 14.0 in and larger and likely carry-over fish. The carry-over of brown trout observed in 2006 was more than 2005 when only one brown trout was an obvious carry-over fish (Figure 1). Based on the length frequency of the brown trout collected, there was no evidence of natural reproduction.

Forty-six rainbow trout that weighed 45.6 lbs were collected. This was a substantial increase from 2005 when only 6 rainbow trout were collected. Rainbow trout ranged in length from 11.9 to 18.6 in and averaged 13.4 in. Ninety-three percent of the rainbow trout collected were 11.5 to 14.5 in and likely from the 2006 stocking. Three rainbow trout were 16 in or longer. Based on the gap in the length frequency distribution, these fish were likely carry-over fish from the 2005 stocking.

DISCUSSION

Carry-over of brown trout in the Brookville tailwater has been observed since 2003. Previously, the number of brown trout that carried over from year to year was determined by examining the length frequency of fish collected. However, this method of assessing carry-over

has become impractical. The carry-over of brown trout increased in 2006 and coincided with the implementation of the 18-in minimum length limit and reduced creel limit in 2005. However, in 2003 and 2004, carry-over of brown trout accounted for 30% of each sample and occurred before these regulations were applied. Therefore, environmental conditions of the tailwater (i.e. water temperature, dissolved oxygen) are likely affecting the carry-over of brown trout. When tailwater conditions are favorable, the carry-over of brown trout is likely to be good and vice-versa. But at this time it is difficult to determine the exact cause of the increased carry-over of brown trout observed in 2006 (implementation of new regulations or variable tailwater conditions).

The potential for overcrowding/stockpiling exists if brown trout carry-over continues to increase. As more brown trout are stocked each year, increased competition could lead to poor condition and slower growth. If poor growth and condition are evident in future surveys, adjusting the annual stocking goal may alleviate competition and improve the health of the tailwater trout fishery. Therefore, age, growth, and condition of brown trout should be evaluated regularly in order to better assess the impacts that increased carry-over is having on the trout fishery.

The temperature regime of the Brookville tailwater has been one of the factors limiting survival and carry-over of brown trout from year to year. In 2005 and 2006, the ACOE and DFW exchanged ideas pertaining to the temperature regime of the Brookville tailwater. It was tentatively agreed upon that water released from the reservoir should not exceed 65°F during the summer and 55°F during the spring and fall. This temperature regime would aid survival and promote brown trout carry-over from year to year. However, because Brookville Reservoir is utilized for flood control, the tailwater temperature regime is largely dictated by reservoir conditions at the time when water is released.

The next survey of the Brookville tailwater trout fishery is scheduled for 2007 and will focus on brown trout age, growth, condition, and survival. Even though natural reproduction of brown trout has not been documented, future sampling should continue to look for signs of reproduction. Previous sampling has occurred at a range of discharges (250cfs in 2003, 47cfs in 2004, and 104cfs in 2005). In 2006, sampling was conducted at a discharge of 47cfs. Sampling should continue at a discharge not exceeding 100cfs to ensure that a representative sample is collected.

Beginning in 2007, the U.S. Fish and Wildlife Service will assume responsibility of stocking brown trout in the Brookville Tailwater. Approximately 2,600 brown trout from Wolf Creek National Fish Hatchery (Jamestown, Kentucky) will be stocked in May, 2007. Anglers are reminded that they may only harvest one brown trout per day, which must be at least 18 in long. Rainbow trout must be at least 7 in long. The daily bag limit for trout (rainbow and brown in aggregate) is five fish per day.

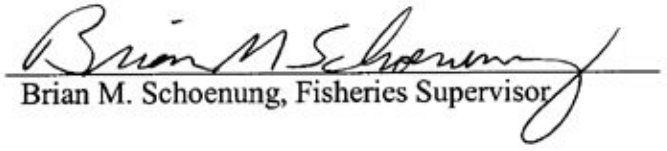
The former closed season for inland stream trout fishing has been changed to a "catch and release only" season from January 1 through April 14. The closed season now runs from April 15 to the last Saturday in April (opening day). Anglers should note that the starting time has been changed from 0500 to 0600 local time to adjust to daylight savings time. Harvest of trout in inland streams, other than Lake Michigan tributaries, begins at 0600 on the last Saturday in April and goes through December 31.

RECOMMENDATIONS

- Continue coordination with ACOE staff to sample at a discharge of 100 cfs or less.
- Re-survey the tailwater in 2007 focusing on the age, growth, condition, and survival of brown trout as well as the possible occurrence of natural reproduction.

Submitted by: Christopher C. Long, Assistant Fisheries Biologist
Date: May 17, 2007

Approved by: J. Rhett Wisener, Fisheries Biologist

Approved by: 
Brian M. Schoenung, Fisheries Supervisor

Date: August 28, 2007

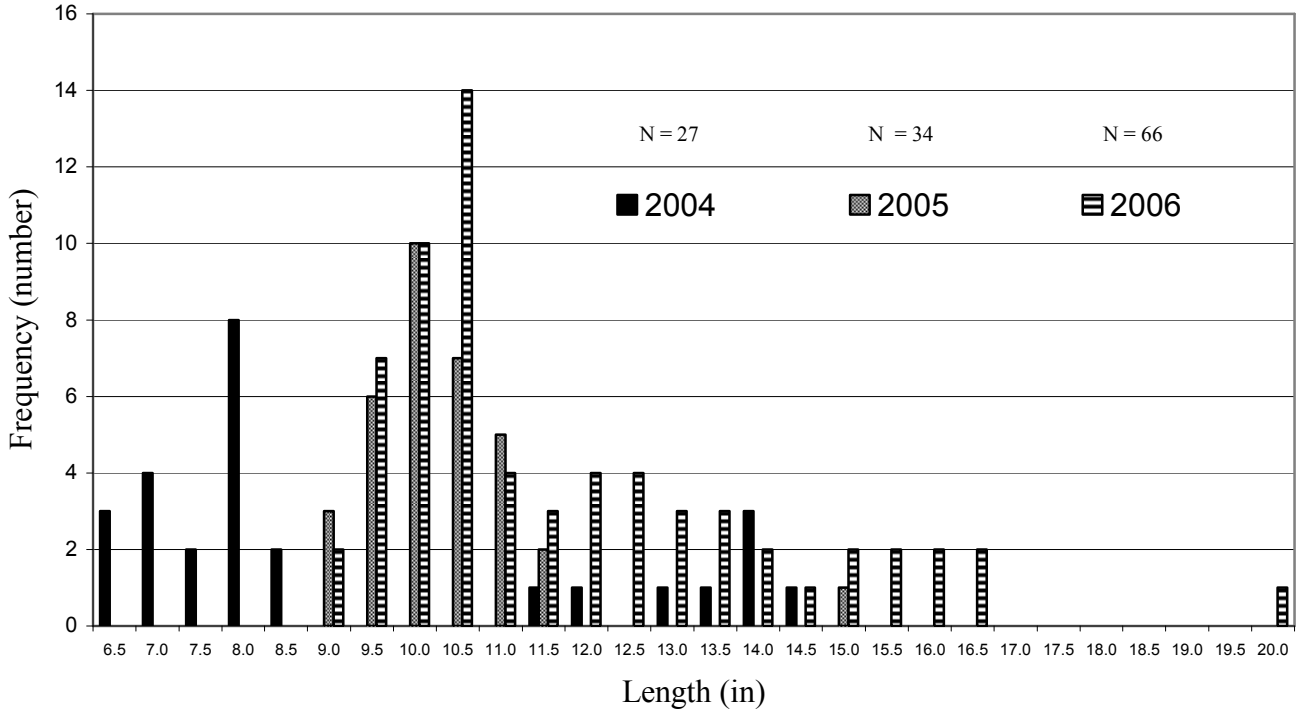


Figure 1. Length frequency of brown trout collected in the Brookville tailwater from 2004 to 2006.

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Brown trout									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0	1	1.5	4.44	
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	66			
9.0	2	3.0	0.32	not aged					
9.5	7	10.6	0.39						
10.0	10	15.2	0.41						
10.5	14	21.2	0.50						
11.0	4	6.1	0.56						
11.5	3	4.5	0.68						
12.0	4	6.1	0.71						
12.5	4	6.1	0.90						
13.0	3	4.5	1.05						
13.5	3	4.5	1.17						
14.0	2	3.0	1.33						
14.5	1	1.5	1.46						
15.0	2	3.0	1.45						
15.5	2	3.0	1.76						
16.0	2	3.0	2.05						
16.5	2	3.0	2.14						
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	106.5/hr	GILL NET CATCH	NA	TRAP NET CATCH	NA

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Rainbow trout									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	46			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5	1	2.2	0.64	not aged					
12.0	5	10.9	0.70						
12.5	14	30.4	0.78						
13.0	8	17.4	0.94						
13.5	10	21.7	1.01						
14.0	3	6.5	1.11						
14.5	2	4.3	1.22						
15.0									
15.5									
16.0	1	2.2	1.70						
16.5									
17.0	1	2.2	2.17						
17.5									
18.0									
18.5	1	2.2	3.21						

ELECTROFISHING CATCH	74.2/hr	GILL NET CATCH	NA	TRAP NET CATCH	NA